

REMARKS

The claims in the application are 1, 3-9, 12-18 and Claims 21-25 added by the present amendment.

Favorable reconsideration of the application as amended is respectfully requested.

Independent Claim 1 has been amended to incorporate a portion of Claim 2 which has been canceled without prejudice. Independent Claim 21 introduced herein is directed to a combination of portions of Claims 1, 3 and 4 and finds support, e.g., in Fig. 1 and the accompanying description in the present application (e.g., paragraph [0015] of the published application). The remaining claims have all been amended to reflect amendment to independent Claim 1, with Claims 22-25 corresponding to recitation found in previously-pending claims.

Accordingly, the only outstanding issue is the art rejection of the claims. More specifically, Claims 1, 6 and 7 have been rejected under 35 U.S.C. §102 as being anticipated by JP2002-45969A in paragraph 2 of the Office Action, while Claims 8, 9 and 17 have been rejected under 35 U.S.C. §103 as obvious over this reference in paragraph 4 of the Office Action and Claims 2-5, 10-16 and 18-20 rejected as obvious additionally in view of U.S. Pat. No. 4,450,341 to Dietrick et al in paragraph 5 of the Office Action. However, it is respectfully submitted the present invention as recited in all pending claims herein is patentable over the applied art, for the following reasons (reference will be made to preferred embodiments of the present invention illustrated in the drawings of the present application).

The present invention is directed to improving resistance of welding nozzles against both mechanical wear and electrical corrosion. This is explicitly attained according to the present as described, e.g., in paragraph [0015] of the published application by eliminating one of the electrical contact points of the welding wire 30 as it passes through the nozzle 1. More specifically, this is attained by, among other features, the explicit combination of (i) a spring element 20 arranged to apply a force transverse to feeding direction to the wire 30, and (ii) either means for preventing contact between the wire 30 and outlet end 3 of longitudinal through-hole 4, 5, 6 within the nozzle 1 (Claim 1) or an electrically-insulating or high-resistance sleeve or coating 9 extending to the outlet end of the longitudinal hole 4, 5, 6 (Claim 21) for preventing or reducing welding current transfer at this outlet end 3.

In JP '969, welding wire W is illustrated as actually contacting the front end 2a of welding contact chip 2, unlike the present invention as recited, e.g., in independent Claim 1 and having, among other features, means for preventing electrical contact between the welding wire 30 and outlet end 3 of contact nozzle 1. Accordingly, JP '969 fails to anticipate independent Claim 1 and the dependent claims therefrom.

Dietrick et al shown wear-resistant member 34 terminating short of discharge end 20 of welding head contact tip 10. Furthermore, while member 34 is disclosed as being wear-resistant, member 34 can be formed of electrically-conductive material, e.g., tool steel or metallic carbide alloys (column 2, line 63-column 3, line 8). Therefore, Dietrick et al fail to add anything to JP '969 which would render obvious the present invention recited in any pending claim herein.

In this regard, it is respectfully emphasized the inventive combination of spring 20 and insulating layer or coating 9 at outlet end 3 of through-hole 4, 5, 6 provides especial advantages not attained with just one of these two features, alone. For example, if just a spring alone, is incorporated into a welding nozzle (as shown, e.g., in JP '969), there is danger or uncertainty of establishing electrical contact of the welding at two separate points within the nozzle, leading to varying of current-carrying length or portion of the wire and hence varying of resistance from the contact nozzle to the arc between the end of the wire and workpiece being welded. This leads to unstable arc energy and hence unreliable welding.

When just an insulating sleeve alone is incorporated (without the spring), then there is still uncertain contact of the welding wire within the nozzle, leading to a great deal of sparking and hence inner wear within the nozzle. Therefore, combining the electrical insulating sleeve/coating 9 and spring 20 forcing the wire W to an inner edge of through-hole 4,5,6, provides improved, reliable welding energy transfer with minimal current fluctuation. This combination clearly results in synergistic improvement over any system possessing just the individual elements.


The remaining art of record has not been applied against the claims and will not be commented upon further.

Accordingly, in view of the forgoing amendment and accompanying remarks, it is respectfully submitted all claims pending herein are in condition for

allowance. Please contact the undersigned attorney should there be any questions. A petition for an automatic two month extension of time for response under 37 C.F.R. §1.136(a) is enclosed in triplicate together with the requisite petition fee and an Information Disclosure Statement.

Early favorable action is earnestly solicited.

Respectfully submitted,


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